

Regularization/GLM (Q6L7)

43% (9/21)

- ✓ 1. Overdispersion in Poisson Regression occurs when
- ☐ A $\text{var}(Y|X) > \text{var}(Y)$
 - ☒ B $\text{var}(Y|X) > \text{mean}(Y|X)$
 - ☐ C Variance is decreasing
 - ☐ D I do not know
- ✓ 2. Which one of these is the measure for goodness of fit for Poisson Regression?
- ☐ A Ordinal R^2
 - ☒ B Chi-square & Pseudo R^2
 - ☐ C I do not know
 - ☐ D There are not measure for it
- ✓ 3. Which one of these is the correct interpretation of the coefficient of Poisson Regression?
- ☐ A For a 1-unit increase in X, we expect a b_1 unit increase in Y.
 - ☒ B For a 1-unit increase in X, we expect b_1 percentage increase in Y.
 - ☐ C For a 1-percentage increase in X, we expect b_1 percentage increase in Y.
 - ☐ D For a 1-percentage increase in X, we expect b_1 unit increase in Y.
 - ☐ E I do not know
- ✗ 4. In Poisson regression...
- ☐ A The asymptotic distribution of the maximum likelihood estimates is multivariate normal.
 - ☐ B The distribution of the maximum likelihood estimates is multivariate normal.
 - ☐ C The asymptotic distribution of the maximum likelihood estimates is multivariate Poisson distribution.
 - ☒ D I do not know
- ✓ 5. Pseudo R-Squared Measures are calculated based on...
- ☒ A The likelihood function
 - ☐ B Chi-squared value
 - ☐ C I do not know
 - ☐ D Overdispersion term

✗ 6. In the case of intercept-only model

- ☐ A The mean of the dependent variable equals the exponential value of intercept
- ☒ B The mean of the dependent variable equals the intercept
- ☐ C The mean of the dependent variable equals 0
- ☐ D I do not know

✓ 7. $\ln(\lambda) = 0.6 - 0.2 \times \text{female}$ [λ = the average number of articles] Note: $e^{-0.2} = 0.78$

- ☐ A One unit increase in female brings a 0.2 decrease in $\ln(\lambda)$.
- ☐ B Being female decreases the average number of articles by 0.78 percent
- ☒ C Being female decreases the average number of articles by 22%
- ☐ D I do not know

✓ 8. While running the Poisson Regression we will have never faced with the value of λ

- ☒ A 0
- ☐ B 1
- ☐ C 2
- ☐ D I do not know

✓ 9. Why does not quasi-Poisson model have AIC?

- ☒ A Quasi-Poisson is used quasi-likelihood instead of log-likelihood estimates.
- ☐ B Quasi-Poisson does not use iterative estimation
- ☐ C I do not know

✓ 10. Why Poisson regression is called log-linear?

- ☒ A Because we use a log link to estimate the logarithm of the average value of the dependent variable
- ☐ B Because we use a log values of independent variable
- ☐ C Because we use a log value of an independent variable is transformed to linear
- ☐ D I do not know

- ✗ 11. In the multiple linear regression, we assume that...
- ☐ A The number of observations is much larger than the number of variables ($n \gg p$)
 - ☐ B The number of observations is slightly larger than the number of variables ($n > p$)
 - ☐ C The number of observations equals than the number of variables ($n = p$)
 - ☐ D The number of observations is less than the number of variables ($n < p$)
 - ☒ E It is not important
 - ☐ F I do not know
- ✗ 12. The way of solving the problem of a large number of variables is...
- ☐ A Subset Selection & Shrinkage (Regularization)
 - ☐ B Shrinkage (Regularization) & Maximum Likelihood estimation
 - ☒ C Dimension Reduction & OLS estimation
 - ☐ D I do not know
 - ☐ E The absence of the right answer
- ✗ 13. The bias of an estimator (e.g. \hat{z}) equals...Hint: the OLS coefficients are unbiased :)
- ☐ A $E(\hat{z}) - z$
 - ☒ B $E(\hat{z}^2) - [E(z)]^2$
 - ☐ C $[E(\hat{z}^2) - E(z)]^2$
 - ☐ D $E(\hat{z}^2)$
 - ☐ E I do not know
- ✗ 14. Which of following is not a type of regularization:
- ☐ A L1 - Lasso
 - ☐ B L2 - Ridge
 - ☐ C Elastic Net
 - ☐ D L3 - Passio
 - ☒ E I do not know
- ✗ 15. The main idea of regularization is
- ☐ A To introduce a small amount of bias in order to have less variance.
 - ☐ B To introduce a small amount of variance in order to have less bias.
 - ☐ C To introduce a small amount of variance and bias in order to have less bias.
 - ☒ D I do not know

✗ 16. With which function we can show regularization in R

- ☐ A glmnet()
- ☐ B regular()
- ☐ C lm()
- ☒ D glm()
- ☐ E I do not know

✗ 17. How the tune of any parametr can be made

- ☐ A using Cross validation
- ☐ B It is impossible
- ☒ C I do not now
- ☐ D using larger sample
- ☐ E only having population

✗ 18. Elastic Net is

- ☐ A the combination of L1 and L2 regularization
- ☐ B the combination of L2 and L3 regularization
- ☐ C is independent from other types of regularization
- ☒ D I do not know
- ☐ E not a type of regularization

✓ 19. Regularization is used only for

- ☐ A Poisson Regression
- ☐ B Linear Regression
- ☐ C Logistic Regression
- ☒ D any regression
- ☐ E I do not know

✗ 20. Regularization can solve the problem of

- ☐ A heteroscedasticity
- ☐ B multicollinearity
- ☐ C autocorrelation
- ☒ D I do not know

✗ 21. Multicollinearity occurs when

- ☐ A $\text{rank}(X) < m$ (m is the number of explanatory variables)
- ☒ B $\text{var}(\varepsilon) = \sigma^2 I$
- ☐ C $E(\varepsilon) = 0$
- ☐ D $\text{cov}(\varepsilon_i, \varepsilon_j) = \text{const}$
- ☐ E I do not know